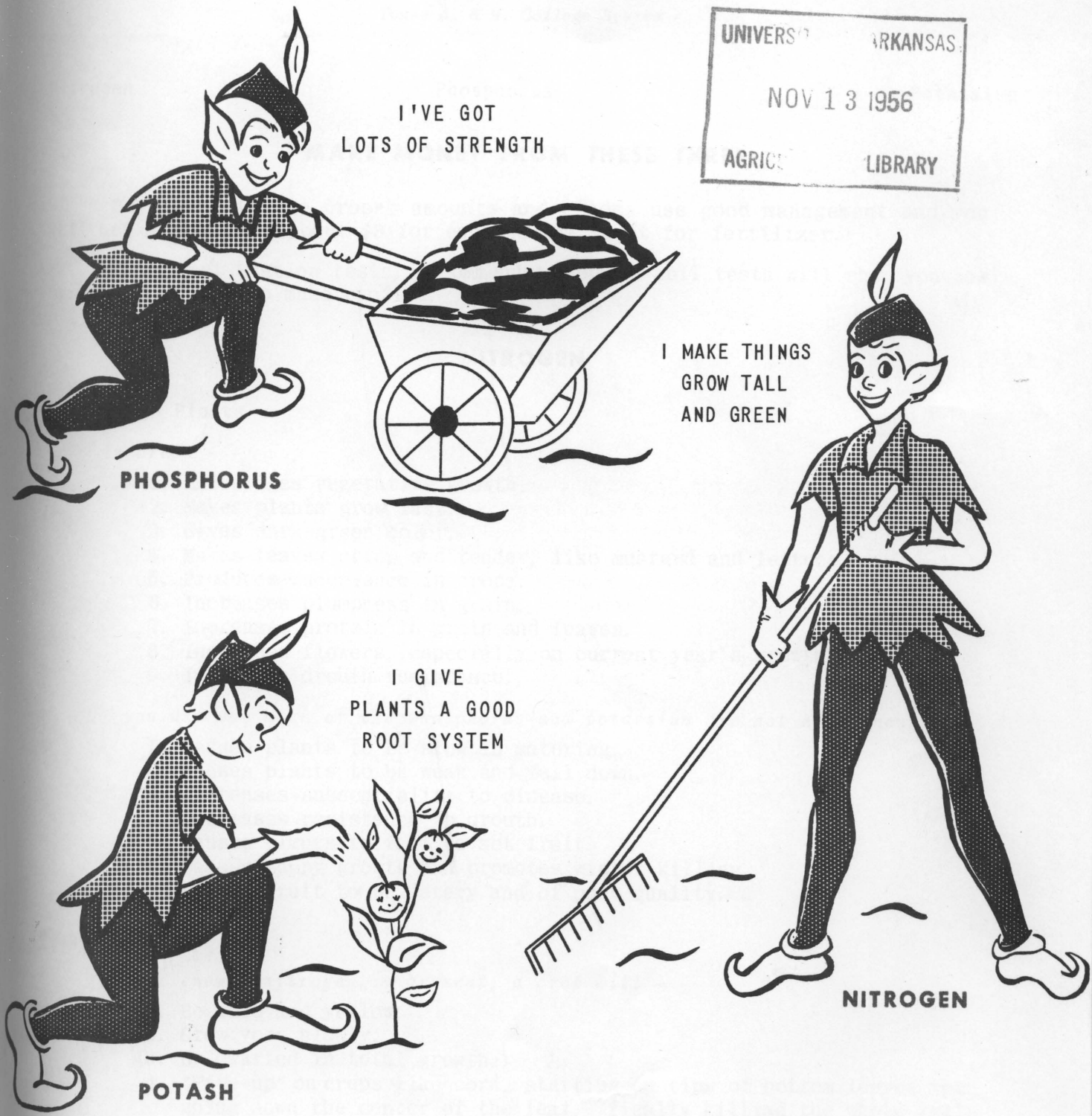
KNOW YOUR FERTILIZERS



TEXAS AGRICULTURAL EXTENSION SERVICE
G. G. GIBSON, DIRECTOR, COLLEGE STATION, TEXAS

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Know Your Fertilizers

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Nitrogen Phosphorus Potassium

MAKE MONEY FROM THESE THREE

Buy these in the proper amounts and kinds, use good management and you will net a profit of about $3 for each dollar spent for fertilizer.

Experiment Station tests, recommendations and soil tests will show you how to use fertilizer to make profits.

NITROGEN

Function in Plants

In crops - -

1. Encourages vegetative growth.
2. Makes plants grow fast.
3. Gives dark-green color.
4. Makes leaves crisp and tender, like mustard and lettuce.
5. Produces succulence in crops.
6. Increases plumpness in grain.
7. Increases protein in grain and leaves.
8. Increases flowers, especially on current year's growth.
9. Increases drouth resistance.

If you use too much or the phosphorus and potassium are not high enough - -

1. Causes plants to be slow in maturing.
2. Causes plants to be weak and fall down.
3. Increases susceptiblity to disease.
4. Decreases resistance to drouth.
5. Causes plants to fail to set fruit.
6. Causes sappy growth and promotes winter killing.
7. Causes fruit to be watery and of poor quality.

Hunger Signs

If not enough nitrogen is present, a crop will - -

1. Be pale and yellow.
2. Grow very slowly.
3. Be dwarfed in total growth.
4. "Fire-up" on crops like corn, starting on tips of bottom leaves then going down the center of the leaf, finally killing the whole leaf. Drouth doesn't make corn "fire-up" from the bottom but makes the leaves roll up.
5. Have a restricted root growth.

Sources

1. Organic matter in the soil.
2. Barnyard manure.
3. Legume cover crops such as hairy vetch.
4. Commercial nitrogen like ammonium sulfate.

In mixed fertilizer like 5-10-5, the first figure is for nitrogen and means 5 pounds of nitrogen per 100 pounds of fertilizer.

1. A 100-pound bag of nitrate of soda contains 16 pounds of nitrogen.
2. A 100-pound bag of ammonium sulphate contains 20 pounds of nitrogen.
3. A 100-pound bag of ammonium nitrate contains 33 pounds of nitrogen.
4. A 100-pound bag of cyanamid contains 42 pounds of nitrogen.
5. 100 pounds of anhydrous ammonia contains 82 pounds of nitrogen.

Value

Nitrogen from any of the main sources has about the same value per pound. Therefore, buy nitrogen fertilizer in whatever source may be available at the cheapest per pound of nitrogen.

Availability

Nitrogen is quickly available for the crops in any of the forms listed.

Loss from Soil

Nitrogen is lost by leaching from the soil more quickly than any of the other plant foods. The nitrate form is lost more quickly than any other form of nitrogen. Sandy soil and especially soils that have sandy subsoils will lose nitrogen from leaching faster than loams or clays.

PHOSPHORUS

Function in Plants

In crops - -

1. Stimulates early root formation and growth, especially lateral and fibrous roots.
2. Gives quick and vigorous start to plants.
3. Increases ratio of grain to stalk.
4. Hastens maturity.
5. Improves quality of crops.
6. Helps in formation of seed.
7. Helps give winter hardiness to grain.
8. Increases disease resistance.
9. Increases drouth resistance.

Hunger Signs

If phosphorus is deficient, your crops will - -

1. Come up but grow slowly.
2. Be generally dwarfed in total growth.
3. Turn purple in crops like corn when small and up to 18 inches high.

4. Not set fruit well.
5. Shed fruit badly.

Sources

Phosphorus may be obtained from commercial fertilizers and manures. (Very little in manures.)

1. A 100-pound bag of superphosphate contains 18 to 20 pounds of phosphoric acid.
2. A 100-pound bag of triple superphosphate contains 40 to 48 pounds of phosphoric acid.

In mixed fertilizers like 5-10-5, the second figure is for phosphoric acid (4.36 pounds of phosphorus) per 100 pounds of fertilizer.

Value

Available phosphoric acid from any of the main sources has about the same value per pound.
(Rock phosphate should be used at rate of 2-5 times the rate for superphosphate to give same immediate results.)

Availability

Phosphorus is not available in the form that crops can use as quickly as nitrogen. Under very acid conditions phosphorus becomes available to ordinary plants so slowly that little good is derived by the crop. Farmers lose much money by putting phosphorus fertilizers on very acid soils where little or no good will be derived from it. Plants do not use as much phosphorus as they do nitrogen or potash. Phosphorus is not lost by leaching down through the soil. It is lost by erosion and fixation.

POTASSIUM

Function in Plants

In crops -- Potassium

1. Improves plant vigor.
2. Increases resistance to disease.
3. Encourages root, bulb and tuber development.
4. Delays maturity.
5. Gives plump, heavy grains.
6. Increases drouth resistance.
7. Increases sugar and starch.
8. Makes plant stems stronger and decreases tendency to lodge.

Hunger Signs

If potassium is deficient - -

1. The crop will "fire-up" on bottom leaves of crops like corn. This firing differs from nitrogen in that the firing goes around the edge of the leaf.
2. Crops like soybeans and cotton will "fire-up" first on tip and then

around edges of leaf, the firing finally killing the plant in severe cases. Firing is not confined to the lower leaves. Leaves fall off too early.

Sources

Potassium is obtained in commercial fertilizers and manure.

1. A 100-pound bag of sulphate of potash contains 48 pounds of potash.
2. A 100-pound bag of muriate of potash contains 50 or 60 pounds of potash.

In a 5-10-5 mixed fertilizer, the last figure is for potash, and means 5 pounds of potash (4.15 pounds of potassium) per 100 pounds of fertilizer.

Value

Potash has about the same value from any of the main sources. Buy it where you can get it the cheapest per pound.

Availability

Potash is not available for crops as quickly as nitrogen but probably more quickly than phosphorus - about 3 weeks in warm moist weather.

Loss from Soil

Potash is not lost from soil by leaching as badly as nitrogen. Potash may be lost on deep sandy soil, particularly if subsoil is sandy.

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Have You Met . . . . . .

. . . . YOUR COUNTY EXTENSION AGENTS? If not, drop by to see them soon. They represent both the United States Department of Agriculture and The Texas A. & M. College System in your county and they can furnish the latest information on farming, ranching and homemaking.

Most county extension agents have their offices in the county courthouse or agriculture building. Get to know them and take advantage of their services.

This publication is one of many prepared by the Texas Agricultural Extension Service to present up-to-date, authoritative information, based on results of research. Extension publications are available from your local agents or from the Agricultural Information Office, College Station, Texas.

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